

What is claimed is:

1           1.     A method for use in a database system, comprising:  
2                 storing a materialized join view based on at least two base  
3 relations;  
4                 storing at least one auxiliary relation containing one or more  
5 attributes of one of the base relations, the auxiliary relation partitioned according  
6 to a join attribute; and  
7                 updating the at least one auxiliary relation in response to  
8 modification of the one base relation.

1           2.     The method of claim 1, further comprising storing the one base  
2 relation that is not partitioned according to the join attribute.

1           3.     The method of claim 2, further comprising:  
2                 receiving a tuple into the database system;  
3                 storing the tuple in one of the at least two base relations;  
4                 storing the tuple in the auxiliary relation; and  
5                 using the auxiliary relation to determine whether to update the  
6 materialized join view.

1           4.     A method comprising:  
2                 receiving a tuple into a relation at a first node, wherein the tuple  
3 comprises a join attribute and the relation is not partitioned according to the join  
4 attribute;  
5                 storing the tuple in an auxiliary relation at a second node, wherein  
6 the auxiliary relation is partitioned according to the join attribute;  
7                 identifying second tuples of a second relation;  
8                 joining the tuple with the second tuples to produce join results; and  
9                 storing the join results in a join view.

1           5.     The method of claim 4, wherein joining the tuple with the second  
2 tuples to produce join results comprises:  
3                 identifying second join attributes in the second tuples; and  
4                 comparing the second join attributes with the join attribute of the  
5 relation.

1           6.     The method of claim 5, wherein identifying second tuples of a  
2 second relation comprises identifying second tuples of the second relation at the  
3 second node.

1           7.     The method of claim 4, wherein storing the tuple in an auxiliary  
2 relation at a second node comprises:  
3                 determining that a join view definition excludes an attribute of the  
4 tuple; and  
5                 not storing the excluded attribute in the auxiliary relation.

1           8.     The method of claim 4, wherein storing the tuple in an auxiliary  
2 relation at a second node comprises:  
3                 determining that a join view definition includes a condition on one  
4 of the attributes of the tuple; and  
5                 identifying the attribute in the tuple;  
6                 determining that the condition is not met; and  
7                 not storing the tuple in the auxiliary relation.

1           9.     The method of claim 4, wherein storing the tuple in an auxiliary  
2 relation at a second node comprises:  
3                 determining that a join view definition includes a condition that  
4 cannot be met; and  
5                 not storing the tuple in the auxiliary relation.

1           10. The method of claim 5, wherein storing the tuple in an auxiliary  
2 relation at a second node comprises:

3                   determining that the join attribute is a key of the relation;  
4                   determining that the second join attribute is a foreign key of a  
5 second relation, wherein the foreign key references to the join attribute; and  
6                   not maintaining a second auxiliary relation.

1           11. The method of claim 4, wherein storing the join results in a join  
2 view comprises:

3                   determining that a join view definition includes a condition on one  
4 of the attributes of the tuple; and  
5                   identifying the attribute in the tuple;  
6                   determining that the condition is not met; and  
7                   not storing the join results in the join view.

1           12. The method of claim 4, wherein storing the join results in a join  
2 view comprises:

3                   determining that a join view definition includes a condition that  
4 cannot be met; and  
5                   not storing the join results in the join view.

1           13. A database system comprising:

2                   a storage module to store relations and at least one auxiliary  
3 relation corresponding to one of the relations, the at least one auxiliary relation  
4 containing one or more attributes of the one relation, the at least one auxiliary  
5 relation partitioned differently than the one relation, the storage module further  
6 to store a join view based on a join of the relations; and

7                   a controller adapted to update the join view using the at least one  
8 auxiliary relation.

1           14.    The database system of claim 13, wherein the controller is further  
2 adapted to receive a tuple and store the tuple in one of the relations and in one  
3 of the at least one auxiliary relations.

1           15.    The database system of claim 14, wherein the controller is further  
2 adapted to not update the join view after receiving some tuples.

1           16.    An article comprising a medium storing instructions for enabling a  
2 processor-based system to:

3                    receive a tuple into a relation at a first node, wherein the tuple  
4 comprises a join attribute and the relation is not partitioned according to the join  
5 attribute;

6                    store the tuple in an auxiliary relation at a second node, wherein  
7 the auxiliary relation is partitioned according to the join attribute;

8                    identify second tuples of a second relation;

9                    join the tuple with the second tuples to produce join results; and

10                   store the join results in a join view.

1           17.    The article of claim 16, further storing instructions for enabling the  
2 processor-based system to:

3                    identify second join attributes in the second tuples; and

4                    compare the second join attributes with the join attribute of the  
5 relation.

1           18.    The article of claim 16, further storing instructions for enabling the  
2 processor-based system to:

3                    determine that a join view definition excludes an attribute of the  
4 tuple; and

5                    not store the excluded attribute in the auxiliary relation.

1           19.    The article of claim 16, further storing instructions for enabling the  
2 processor-based system to:

3                   determine that a join view definition includes a condition on one of  
4 the attributes of the tuple; and

5                   identify the attribute in the tuple;

6                   determine that the condition is not met; and

7                   not store the tuple in the auxiliary relation.

1           20.    The article of claim 16, further storing instructions for enabling the  
2 processor-based system to:

3                   determine that a join view definition includes a condition that  
4 cannot be met; and

5                   not store the tuple in the auxiliary relation.

1           21.    The article of claim 17, further storing instructions for enabling the  
2 processor-based system to:

3                   determine that the join attribute is a key of the relation;

4                   determine that the second join attribute is a foreign key of a  
5 second relation, wherein the foreign key references to the join attribute; and

6                   not maintain a second auxiliary relation.

1           22.    The article of claim 16, further storing instructions for enabling the  
2 processor-based system to:

3                   determine that a join view definition includes a condition on one of  
4 the attributes of the tuple; and

5                   identify the attribute in the tuple;

6                   determine that the condition is not met; and

7                   not store the join results in the join view.

1           23.    The article of claim 16, further storing instructions for enabling the  
2 processor-based system to:  
3               determine that a join view definition includes a condition that  
4 cannot be met; and  
5               not store the join results in the join view.